

## Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004-2005. For more information, please visit [www.landfire.gov](http://www.landfire.gov). Please direct questions to [helpdesk@landfire.gov](mailto:helpdesk@landfire.gov).

### Potential Natural Vegetation Group (PNVG):

R3MSHB

Mountain Mahogany Shrubland

### General Information

**Contributors** (additional contributors may be listed under "Model Evolution and Comments")

#### Modelers

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#### Vegetation Type

Shrubland

#### Dominant Species\*

CEMO2  
CHRY9  
SYMPH  
PRVI

#### General Model Sources

- ☐ Literature  
☐ Local Data  
☒ Expert Estimate

#### LANDFIRE Mapping Zones

14	24	28
15	25	
23	27	

#### Rapid Assessment Model Zones

- |  |   |
|--|---|
| <input type="checkbox"/> California      | <input type="checkbox"/> Pacific Northwest    |
| <input type="checkbox"/> Great Basin     | <input type="checkbox"/> South Central        |
| <input type="checkbox"/> Great Lakes     | <input type="checkbox"/> Southeast            |
| <input type="checkbox"/> Northeast       | <input type="checkbox"/> S. Appalachians      |
| <input type="checkbox"/> Northern Plains | <input checked="" type="checkbox"/> Southwest |
| <input type="checkbox"/> N-Cent. Rockies |   |

### Geographic Range

This is a minor but relatively widespread PNVG that occurs throughout the northern portion of the Southwest region (i.e., Colorado). The description here focuses more on true mountain-mahogany, which is generally distributed on the west side of the Rocky Mountains in the foothills and mountains of Utah, Colorado, and Wyoming. The range of true mountain-mahogany also extends north into Montana, east into South Dakota and Nebraska, south from Oklahoma into Mexico, and west into Arizona and Nevada. True mountain-mahogany occasionally occurs in Idaho and southwestern Oregon (Marshall 1995).

### Biophysical Site Description

This PNVG occurs in the transition zone between the foothill and montane life zones. It is generally a relatively minor inclusion in woodlands and open forestlands. It ranges from roughly 7,000 ft. to 9,500 feet in the upper Rio Grande drainage. This PNVG occurs on relatively xeric sites with thinly- to moderately well developed soils on moderately steep to steep southerly aspects. This PNVG is not intended to cover ocean-spray (HODU) dominated communities on extremely rocky sites (where vegetation is clearly subordinate to rock).

### Vegetation Description

The mountain shrubland PNVG is an aggregation of numerous shrubland-dominated ecosystems. Species dominance varies depending on site conditions and by geographic location. Species dominant include true mountain mahogany (*Cercocarpus montanus*) and sumac (*Rhus trilobata*) at lower elevations, with several species of rabbitbrush (*Chrysothamnus* spp.), snowberry (*Symphoricarpos* spp.), chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier* spp.) at higher elevations. Antelope bitterbrush (*Purshia tridentata*) and big sagebrush (*Artemisia tridentata*) may also be present. Gambel's oak is not included here.

### Disturbance Description

Historically, this type may have been in a Fire Regime II -- primarily short-interval (e.g., 20-50 yr) stand

\*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

replacement fires in the shrub-dominated layer. Nearly all the dominant species in this PNVG have the capability to resprout after disturbance.

Mixed severity fires were modeled here to capture moderate top-kill (25-75%) fire effects.

### Adjacency or Identification Concerns

If Gambel oak is present, please consult one of the PNVGs that includes Gambel oak (R3QUGA, R3PPGO).

This PNVG may be similar to the PNVG R0MTSB for the Northern and Central Rockies model zone, but the fire frequency is longer in the Northern and Central Rockies PNVG, probably due to geographic and climatic changes. This PNVG may also be similar to the PNVG R2MSHBwt for the Great Basin model zone, but the proportions of mixed versus replacement fire are opposite in the two regions, probably due to differences in weather and lightning patterns.

### Scale Description

**Sources of Scale Data** ☐ Literature ☐ Local Data ☒ Expert Estimate

Local observations (Erhard 2004) suggest that the scale of the most common disturbance extent is relatively small. This PNVG is generally small and the disturbance regime is expected to be relatively frequent under historic conditions.

### Issues/Problems

Original model information (pre-peer review) was based on experience in the upper Rio Grande drainage (specifically the Rio Grande NF). Peer reviewers added to the geographic distribution and species lists for this PNVG to broaden its geographic inclusion.

### Model Evolution and Comments

Additional reviewer included: Brenda Wilmore (bwilmore@fs.fed.us).

Peer review for this type was mixed. Two reviewers agreed with the model parameters. One reviewer felt the fire return interval should be a little longer, putting it into Fire Regime Group III or IV. Another reviewer suggested that R3MSHB and R3QUGA be combined and have a total MFI of 100 years with no mixed or surface fires. As a compromise, the amount of replacement fire in the model was cut in half equally in all classes. As a result, the amount of mixed fire was also reduced. The total MFI changed from 28 years to 55 years. The resulting changes in each class were minimal (<5%), and the proportional distribution remained the same (i.e., dominated by class E). Peer reviewers also added to the geographic distribution and species lists for this PNVG to broaden its geographic inclusion.

Quality control resulted in elimination of rule violations (use of relative age) in all classes except A.

A similar type, Mountain Shrubland with trees (R3MSHBwt) was dropped from the Rapid Assessment based on peer review and quality control. Its mapping rules were combined with this PNVG.

### Succession Classes

*Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook ([www.frcc.gov](http://www.frcc.gov)).*

**Class A 15 %**

Early1 PostRep

**Description**

Early succession, usually after moderately frequent stand replacement fires; grasses and forbs dominant.

**Indicator Species\* and Canopy Position**

BOGR2

MUMO

**Upper Layer Lifeform**

- ☐ Herbaceous  
☐ Shrub  
☐ Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	0 %	10 %
Height	no data	no data
Tree Size Class	no data	

- ☐ Upper layer lifeform differs from dominant lifeform.  
Height and cover of dominant lifeform are:

**Class B 15 %**

Mid1 Closed

**Description**

>10% shrub cover (i.e., line intercept method) by weakly sprouting and seed producing shrubs; grasses/forbs dominant in scattered openings.

**Indicator Species\* and Canopy Position**

CEMO2

CHRY9

BOGR2

**Upper Layer Lifeform**

- ☐ Herbaceous  
☐ Shrub  
☐ Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	11 %	75 %
Height	no data	no data
Tree Size Class	no data	

- ☐ Upper layer lifeform differs from dominant lifeform.  
Height and cover of dominant lifeform are:

**Class C 10 %**

Mid1 Open

**Description**

<10% shrub cover, with grasses/forbs dominant in extensive openings.

**Indicator Species\* and Canopy Position**

BOGR2

MUMO

**Upper Layer Lifeform**

- ☐ Herbaceous  
☐ Shrub  
☐ Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	1 %	10 %
Height	no data	no data
Tree Size Class	no data	

- ☐ Upper layer lifeform differs from dominant lifeform.  
Height and cover of dominant lifeform are:

**Class D 10 %**

Late1 Open

**Description**

<10% shrub cover, with overmature shrubs as patchy dominant overstory (e.g., in rock outcrops); grasses/forbs dominant in extensive openings.

**Indicator Species\* and Canopy Position**

CEMO2

BOGR2

MUMO

**Upper Layer Lifeform**

- ☐ Herbaceous  
☐ Shrub  
☐ Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	1 %	10 %
Height	no data	no data
Tree Size Class	no data	

- ☐ Upper layer lifeform differs from dominant lifeform.  
 Height and cover of dominant lifeform are:

**Class E 50 %**

Late1 Closed

**Description**

>10% shrub cover; all age classes present but dominated by overmature shrubs (e.g., in rocky draws).

**Indicator Species\* and Canopy Position**

CEMO2

CHRS9

SYMPH

MUMO

**Upper Layer Lifeform**

- ☐ Herbaceous  
☐ Shrub  
☐ Tree

**Fuel Model** no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	11 %	75 %
Height	no data	no data
Tree Size Class	no data	

- ☐ Upper layer lifeform differs from dominant lifeform.  
 Height and cover of dominant lifeform are:

**Disturbances****Non-Fire Disturbances Modeled**

- ☐ Insects/Disease  
☒ Wind/Weather/Stress  
☐ Native Grazing  
☒ Competition  
☐ Other:  
☐ Other:

**Fire Regime Group: 4**

I: 0-35 year frequency, low and mixed severity  
 II: 0-35 year frequency, replacement severity  
 III: 35-200 year frequency, low and mixed severity  
 IV: 35-200 year frequency, replacement severity  
 V: 200+ year frequency, replacement severity

**Fire Intervals (FI):**

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

**Historical Fire Size (acres)**

Avg:

Min:

Max:

**Sources of Fire Regime Data**

- ☐ Literature  
☐ Local Data  
☒ Expert Estimate

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	75			0.01333	73
Mixed	200			0.005	27
Surface					
All Fires	55			0.01834	

\*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

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